

CLAIMS

1. A computer-implemented method of reorganizing an ICF catalog comprising a key sequential data set (KSDS) BCS in a VSAM system while the catalog is open, the BCS comprising a data component and an index component, and the reorganization method comprising the steps of:

- (a) stabilizing the catalog and opening it with exclusive control;
- (b) creating a backup of the index component;
- (c) using the sequence set records of the index component, constructing a logical CI correlation table, the table indicating, for each data CI in the data set, the physical location of the CI in the data component and the logical location of the CI in key sequence;
- (d) using the logical CI correlation table, reading data CIs from the data component out to an internal backup data set in potential logical key sequence order so as to form an ordered backup of the data without sorting;
- (e) clearing all data CI's in the data component and clearing the index component;
- (f) updating the BCS VSAM control blocks so as to reflect an empty BCS;
- (g) reloading the data set from the ordered backup, sorting of records if necessary, and using standard VSAM I/O to reload the data records and reconstruct the index; and
- (h) closing the catalog to update VVRs in the VVDS and re-sync it with CAS.

2. A reorganization while open method according to claim 1 wherein the logical CI correlation table is constructed in random access storage.

3. A reorganization method according to claim 1 wherein the reloading step includes applying the original free space attributes of the BCS.

4. A reorganization method according to claim 1 and further comprising creating an ESTAE environment prior to said creating a backup of the index component, and terminating the ESTAE environment after said reloading step.
5. A reorganization method according to claim 1 and further comprising checking for errors during the reloading step and, if an error is detected, recovering the catalog to its pre-reorganization state.
6. A reorganization method according to claim 5 and wherein said recovering step comprises, copying index and data CI's from the internal backup into the BCS physical locations indicated in the internal backup, thereby restoring the index and data component to its pre-re-org state.
7. A data structure for storing a correlation between the logical keys of a BCS data set and the respective physical locations of the data set, for use in reorganizing the BCS while open.
8. A table for storing a correlation between the logical order of the data CIs of a BCS data set and the physical location of the data CIs, for use in reorganizing the BCS while open.
9. A data structure according to claim 7 for storing a correlation between the logical order of the keyed records of a BCS data set and the respective data CIs that contain them.
10. A logical CI correlation table for use in re-organizing or restoring an ICF catalog in a VSAM storage environment, the correlation table comprising:
a series of entries, each entry corresponding to a physical CI number in the BCS data component; and each entry including a first pointer to a CI containing lower keys and a second pointer to a CI containing higher keys, so

that the table contents together form a logical [key sequential linked] list of the Cls.

11. A correlation table for use in re-organizing an ICF catalog in a VSAM storage environment, the correlation table comprising:

a series of entries, each entry corresponding to one of the data CI's in the catalog, and wherein each entry in the table comprises a forward pointer to support reading the data records in key sequence.

12. A correlation table according to claim 11, wherein a predetermined value is used in the table to indicate either end of a chain of key values.

13. A correlation table according to claim 11, wherein a predetermined pointer value is used in the table to indicate an empty data CI.

14. A correlation table according to claim 11, wherein a predetermined pointer value is used in the table to indicate an end of a chain of key values.

15. A correlation table according to claim 11, wherein each entry further includes a backward pointer.

16. A correlation table according to claim 11, wherein each table entry that does not correspond to a data CI containing the high key includes a forward pointer identifying the data CI having a next key in a predetermined key sequence.

17. A method of stabilizing a an ICF catalog in a VSAM system preparatory to re-organizing the catalog, the method comprising the steps of:

- (a) issuing an instruction to obtain a first timestamp;
- (b) reading the BCS VVR records to obtain the latest BCS refresh timestamp;
- (c) opening the BCS with a standard VSAM OPEN macro;

- (d) issuing a RESERVE macro for the SYSIGGV2 resource name, to obtain exclusive control;
- (e) obtaining the VVRs for the data and index components of the BCS from the VVDS on the volume where the BCS resides;
- (f) comparing the first timestamp to the latest BCS refresh timestamp stored in the BCS's data component VVR; and
- (g) if the latest BCS refresh timestamp is greater, repeating the foregoing steps (a) through (f), inclusive, until the latest BCS refresh timestamp is equal or less than the timestamp obtained prior to the latest iteration of the step (c) opening process.
- (h) alternatively to steps (e) – (g) to stabilize the BCS environment, the embodiment may use the VERIFY macro with the REFRESH option.